

# DRONE MISSION PLANNING SOFTWARE

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# OVERVIEW

- PROBLEM DEFINITION
- PROJECT STATUS
- GOALS & PLANS
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# PROBLEM DEFINITION

THE GOAL OF THIS PROJECT IS TO DESIGN AND DEVELOP A GRAPHICAL USER INTERFACE (GUI) FOR DRONE MISSION PLANNING.

## REQUIREMENTS:

- USER FRIENDLY INTERFACE
- ALLOW 3D MISSION PLANNING
- UPLOAD THE FLIGHT PLAN USING XAPI AND XBEE
- ALLOW MANUAL OVERRIDE DURING FLIGHT
- IMPLEMENT DRONE HARDWARE FOR FLIGHT CONTROL

# PROJECT STATUS

- WORK ON THE GUI HAS BEGUN.
- THE DRONE FLYS!!!
- PACKET TYPES HAVE BEEN IDENTIFIED.



# GOALS & PLANS

## GOAL

DESIGN A BASIC FLIGHT PLAN (I.E. TAKE-OFF AND LAND) USING THE MISSION PLANNING SOFTWARE, SEND THE MISSION PLAN TO THE DRONE, AND THEN HAVE THE DRONE CARRY OUT THE MISSION.

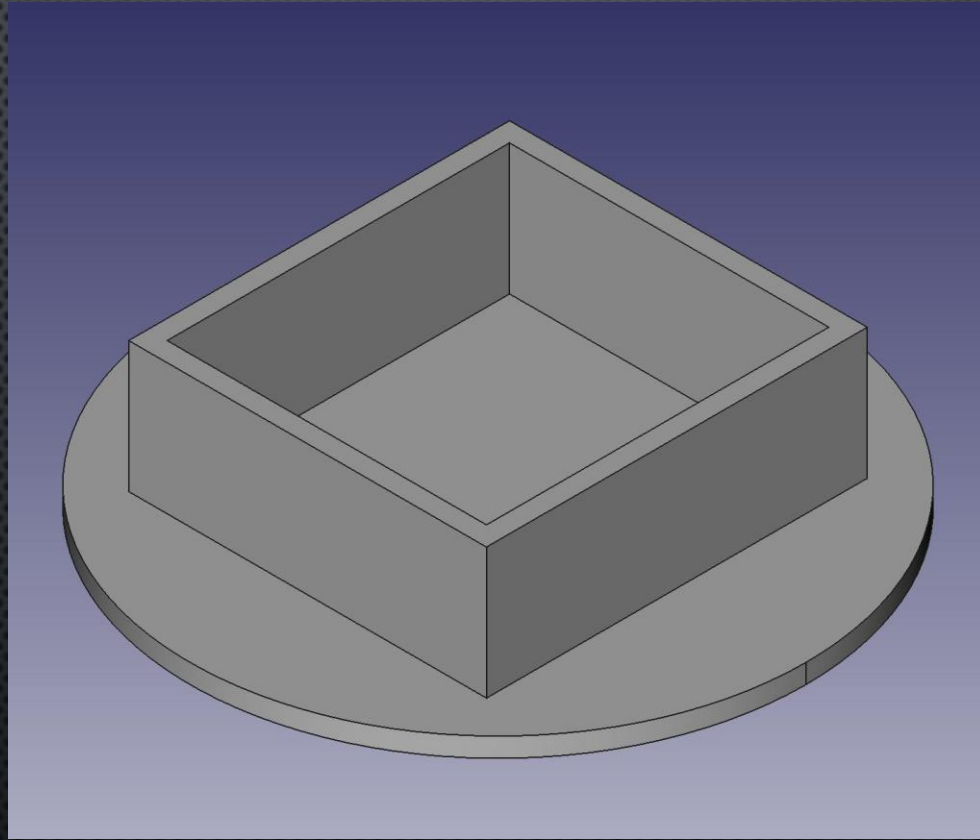
## PLAN

DAVID IS WORKING ON THE HARDWARE SO THE DRONE IS CAPABLE OF TESTING.

TAYLOR IS FOCUSING ON DEVELOPING A PACKET AND THE FORMAT OF THE MESSAGES.

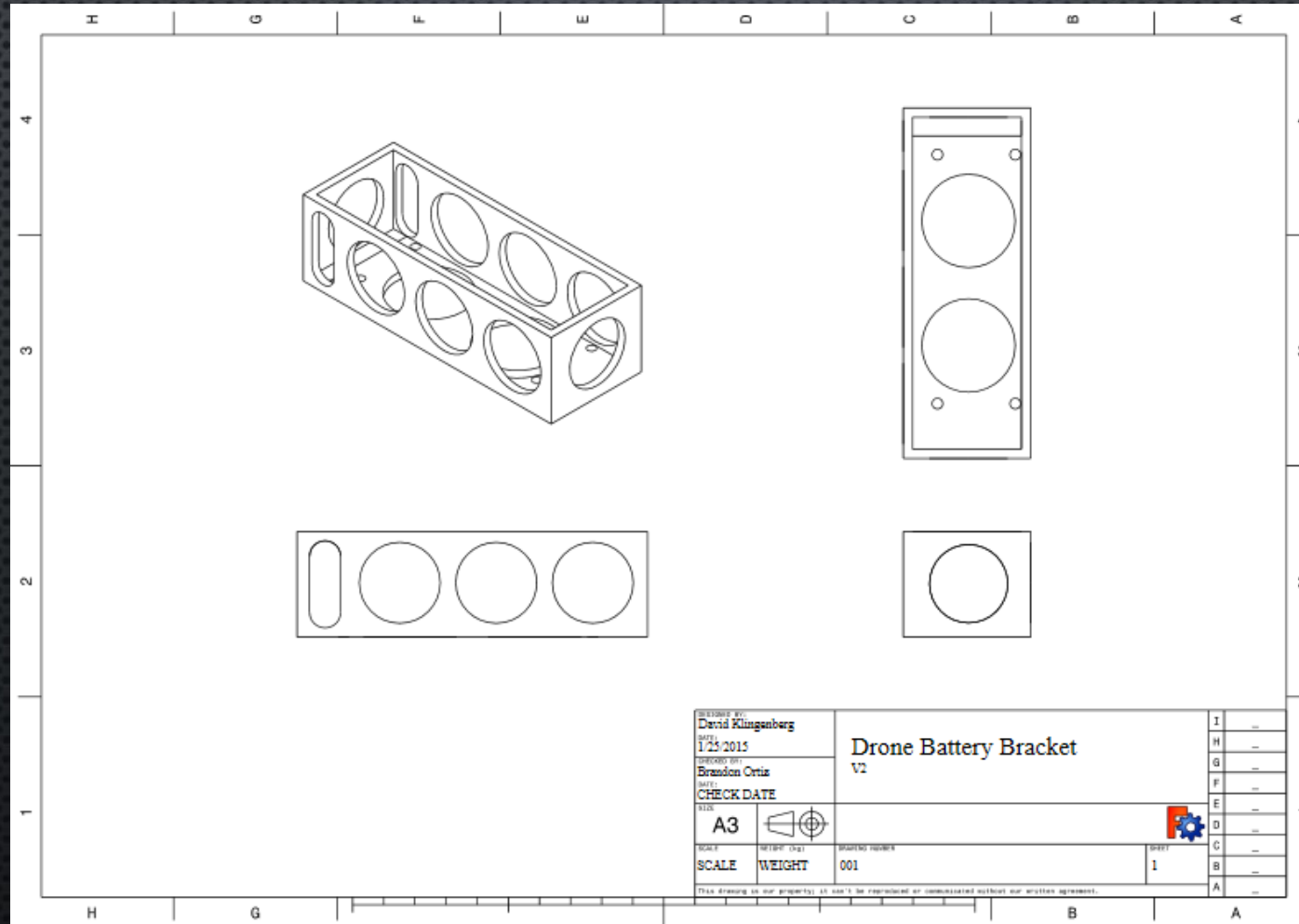
EMETH AND JOE ARE ON GUI.

# HARDWARE





# HARDWARE

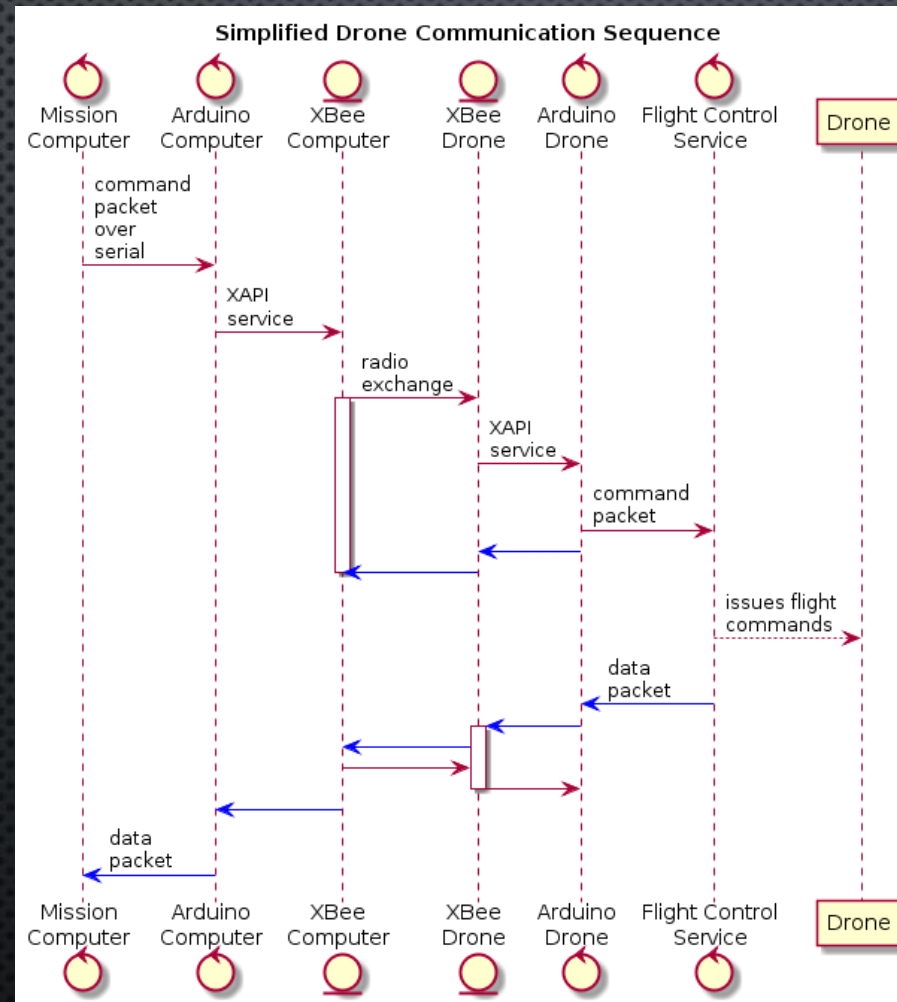


# HARDWARE





# COMMUNICATIONS

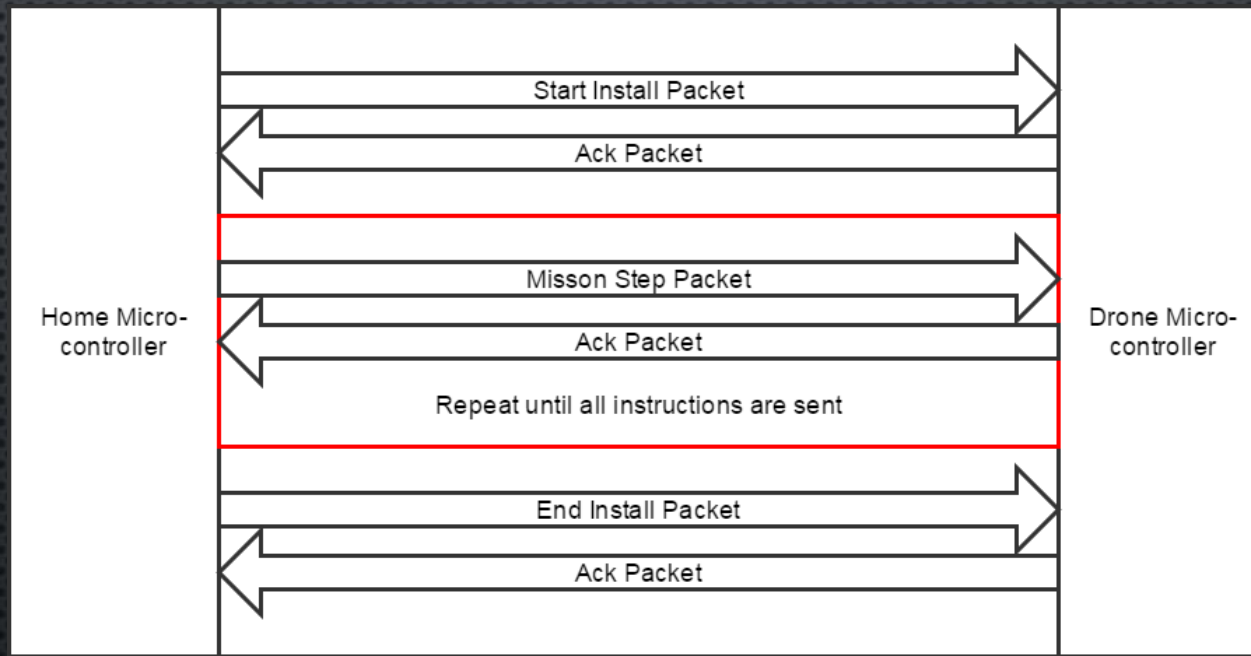


# COMMUNICATIONS

TUN Type Key Internal/External	Payload	Use
0x50/0x51	Altitude	Take off and maintain specific altitude
0x52/0x53	N/A	Land
0x54/0x55	X,Y,Altitude	Go to specific coordinate
0x56/0x57	MoveDirection,Amount,Metric	Carry out specific move (North/South/East/West)
0x58/0x59	N/A	Start mission plan upload
0x60/0x61	X,Y,Altitude	Mission instruction - go to specific coordinate
0x62/0x63	MoveDirection,Amount,Metric	Mission instruction - carry out specific move (North/South/East/West)
0x64/0x65	ChecksumValue	End install and check checksum to validate success
0x66/0x67	N/A	Stop current mission plan and activate manual control (maintain altitude)
0x68/0x69	N/A	Stop current mission plan and activate manual control (no longer autonomous)
0x70/0x71	N/A	Acknowledgment (ACK)
0x72/0x73	N/A	Acknowledgment of issue (NACK)
0x74/0x75	InstrumentData	Heartbeat that contains the drone's current state
0x76/0x77	Altitude	Set altitude
0x78/0x79	Speed	Set the never exceed speed
0x80/0x81	Speed	Set never exceed fall speed
0x82/0x83	Throttle	Set throttle



# COMMUNICATIONS



# MISSION CONTROL SOFTWARE

## GOALS

- HAVE TOPOGRAPHICAL DATA AVAILABLE FOR MISSION PLANNING
- REAL TIME CONTROLS
  - EMERGENCY LAND BUTTON
  - PAUSE MISSION AND HOVER BUTTON



# MISSION CONTROL SOFTWARE

## GOALS

INSTRUMENT PANEL — PROVIDES REAL TIME INFORMATION ABOUT DRONE IN FLIGHT

- ARTIFICIAL HORIZON
- VERTICAL SPEED INDICATOR
- DIAL COMPASS
- TWO MINUTE TURN COORDINATOR

# MISSION CONTROL SOFTWARE

## INSTRUMENT PANEL





DEMO

QUESTIONS?